

# PATENT ABSTRACTS OF JAPAN

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(21)Application number : 03-103751 (71)Applicant : UNIV COLORADO FOUND  
 (22)Date of filing : 08.04.1991 (72)Inventor : SIEVERS ROBERT E  
 HANSEN BRIAN N

(30)Priority

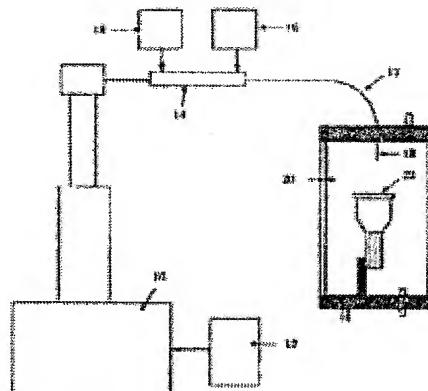
Priority number : 90 507829 Priority date : 12.04.1990 Priority country : US

## (54) CHEMICAL VAPOR DEPOSITION USING SUPERCRITICAL FLUID SOLUTION

### (57)Abstract:

PURPOSE: To deposit high-quality films of desired materials at a low temp. and high speed on a substrate by rapidly expanding a supercritical soln. prep'd. by dissolving reagents, etc., into supercritical fluid and inducing a chemical reaction on the substrate surface, etc.

CONSTITUTION: The solvent, such as pentane, from a solvent tank 12 is supplied to a supercritical fluid pump 10 where the solvent is pressurized. Further, ≥1 kinds of the reagents from a reagent tank 16 are supplied in the stoichiometric ratios suitable for forming the films of the desired materials to a soln. tank 14. This tank 14 is next pressurized by the pressurized solvent from the pump 10. The content of the tank 14 forms the supercritical soln. heated to the critical temp. of the solvent or above. When the soln. is released through a line 17 from a restreak orifice 18, the solvent expands rapidly and vapor or extremely fine aerosol is formed while the individual molecules or small clusters of the reagents and the solvent are formed. These components participate in the chemical reaction on (near) the substrate surface and deposit the desired films by evaporation thereon.



## PATENT ABSTRACTS OF JAPAN

(11)Publication number : 2004-033956  
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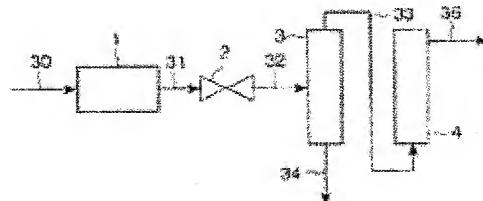
(21)Application number : 2002-196306 (71)Applicant : KOBE STEEL LTD  
(22)Date of filing : 04.07.2002 (72)Inventor : YAMAGATA MASAHIRO

**(54) TREATMENT METHOD OF WASTE HIGH PRESSURE FLUID AND EQUIPMENT FOR THE SAME**

**(57)Abstract:**

**PROBLEM TO BE SOLVED:** To provide a treatment method of a waste high pressure fluid capable of efficiently separating and/or removing unnecessary substances from the waste high pressure fluid and recovering a high pressure fluid with a high purity and to provide a treatment equipment capable of efficiently carrying out the treatment method.

**SOLUTION:** The treatment method is for treating a waste high pressure fluid accompanied by unnecessary substances removed from an object to be treated by bringing the high pressure fluid into contact with the object to be treated in a high pressure treatment tank and involves the steps of reducing pressure of the waste high pressure fluid to a waste middle pressure fluid; supplying the waste middle pressure fluid to a separation means having a filler for preliminary refining; discharging, together with the unnecessary substances, a liquid component generated by the preliminary refining, and refining the gaseous component obtained by the preliminary refining with an adsorption means having an adsorbent.



## PATENT ABSTRACTS OF JAPAN

(11)Publication number : 2002-336675  
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(21)Application number : 2001-148194

(71)Applicant : DAINIPPON SCREEN MFG CO LTD  
 KOBE STEEL LTD

(22)Date of filing : 17.05.2001

(72)Inventor : MIZOBATA IKUO  
 MURAOKA YUSUKE  
 SAITO KIMITSUGU  
 KITAKADO RYUJI  
 INOUE YOICHI  
 SAKASHITA YOSHIHIKO  
 WATANABE KATSUMITSU  
 YAMAGATA MASAHIRO

## (54) APPARATUS AND METHOD FOR TREATING UNDER HIGH PRESSURE

## (57)Abstract:

PROBLEM TO BE SOLVED: To provide an apparatus and a method for treating a substrate under high pressure, in which the substrate can be treated by using a pure processing fluid so that the atmospheric component intruded into a treating tank when the substrate is placed is not made to flow in a fluid producing/recovering system.

SOLUTION: Valves V1, V2, V3, V4 and V6 are closed and only a valve V5 is opened when the door of a substrate cleaning tank 5 is opened for placing the substrate so that gaseous carbon dioxide is supplied to the tank 5 and the tank 5 is purged for preventing the atmospheric component from intruding into the tank 5. Next, the door of the tank 5 is closed and the valve V6 is opened at the same time to form a venting line of the tank 5 so that the gas existing in the tank 5 and its surrounding pipes is pushed out to the atmosphere by the supplied gaseous carbon dioxide and the tank 5 is purged so that the atmospheric component to intrude into the tank 5 and its surrounding pipes by some rare accident does not stay behind. Then, the substrate is cleaned by using supercritical carbon dioxide.

